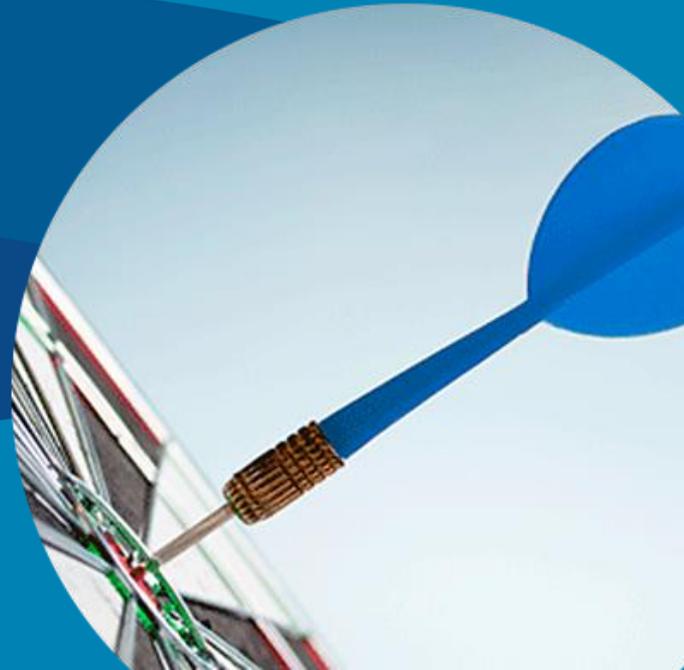


# Kentucky Retirement Systems

## 2017 Actuarial Valuation Results

### December 7, 2017

Joe Newton, FSA, EA, MAAA  
Janie Shaw, ASA, MAAA  
Danny White, FSA, EA, MAAA



# Agenda

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- Summary of Valuation Results
  - Comments on valuation results
  - Contribution rates
  - Funded status
- Projection Information for Pension Funds
  - Unfunded liability and funded ratio
  - Contribution dollars and rate of pay
- Closing Remarks

# Comments on Valuation Results

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- Imperative for the employer contribution rate for the KERS Non-Hazardous Retirement Fund to increase to the amount disclosed in the 2017 valuation report.
- Current assets cover two years of benefit payments
  - June 30, 2017 assets were \$2,057 million (excluding the 401(h) assets)
  - Benefit payments for the 2017 fiscal year were \$960 million
- Contribution rate for the 2019 fiscal year is expected to result in the fund being external cash flow positive (*slightly*)
  - Total Projected member and employer contributions are \$1,164 million for the 2019 fiscal year.

# Comments on Valuation Results (continued)

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- There were no benefit changes since the prior valuation
- The 2017 valuation based on updated economic assumptions (inflation, investment return, and payroll growth rate)
  - Comparison to the prior year is difficult for certain measures
- Investment return was 12.9% to 13.8% (return varies by fund)
  - \$887 million more in plan assets than expected (all funds combined)
  - Recognized in the contribution rates over the next five-years

# Comments on Valuation Results (continued)

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- Covered payroll for the KERS Hazardous and CERS Hazardous systems increase by approximately 10% and SPRS increased by 6.6%
  - Resulted in some larger than expected liability increases, but also lowered the contribution rate (expressed as a percentage of payroll)
- Health insurance premiums for 2018 were lower than expected
  - resulting in liability gains and slightly lower than forecasted contribution rates

# Employer Contribution Rates (%) – Comparison to the FY 2019 Budget

Item	2017 Valuation Effective for FY 2018/2019			FY 2018/2019 Budget Forecast <sup>1</sup>		
	Pension	Insurance	Combined	Pension	Insurance	Combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)
KERS Non-Hazardous	71.03%	12.40%	<b>83.43%</b>	70.68%	13.38%	<b>84.06%</b>
KERS Hazardous	34.39%	2.46%	<b>36.85%</b>	36.52%	4.60%	<b>41.12%</b>
CERS Non-Hazardous	21.84%	6.21%	<b>28.05%</b>	21.82%	7.04%	<b>28.86%</b>
CERS Hazardous	35.69%	12.17%	<b>47.86%</b>	35.76%	14.91%	<b>50.67%</b>
SPRS	119.05%	27.23%	<b>146.28%</b>	119.95%	34.15%	<b>154.10%</b>

<sup>1</sup> Letters dated August 11 and August 23.

# Employer Contribution Requirements (\$ in Millions) – Compared to FY 2019 Budget

Item	2017 Valuation Effective for FY 2018/2019			FY 2018/2019 Budget Forecast <sup>1</sup>			Increase (4) – (7)
	Pension	Insurance	Combined	Pension	Insurance	Combined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KERS Non-Hazardous	\$1,101	\$191	<b>\$1,292</b>	\$1,081	\$204	<b>\$1,285</b>	<b>\$7</b>
KERS Hazardous	57	4	<b>61</b>	54	7	<b>61</b>	<b>0</b>
CERS Non-Hazardous	546	154	<b>700</b>	524	169	<b>693</b>	<b>7</b>
CERS Hazardous	192	65	<b>257</b>	180	75	<b>255</b>	<b>2</b>
SPRS	58	13	<b>71</b>	55	15	<b>70</b>	<b>1</b>

<sup>1</sup> Letters dated August 11 and August 23.

# Employer Contribution Rates (%) – Comparison to the 2016 Actuarial Valuation

Item	2017 Valuation Effective FY 2018/2019			2016 Valuation Effective FY 2017/2018 <sup>1</sup>		
	Pension	Insurance	Combined	Pension	Insurance	Combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)
KERS Non-Hazardous	71.03%	12.40%	<b>83.43%</b>	41.98%	8.41%	<b>50.39%</b>
KERS Hazardous	34.39%	2.46%	<b>36.85%</b>	20.48%	1.34%	<b>21.82%</b>
CERS Non-Hazardous	21.84%	6.21%	<b>28.05%</b>	14.48%	4.70%	<b>19.18%</b>
CERS Hazardous	35.69%	12.17%	<b>47.86%</b>	22.20%	9.35%	<b>31.55%</b>
SPRS	119.05%	27.23%	<b>146.28%</b>	71.57%	18.10%	<b>89.67%</b>

<sup>1</sup> Effective for FY 2017/2018 for CERS only. KERS and SPRS are on a biennial contribution rate schedule.

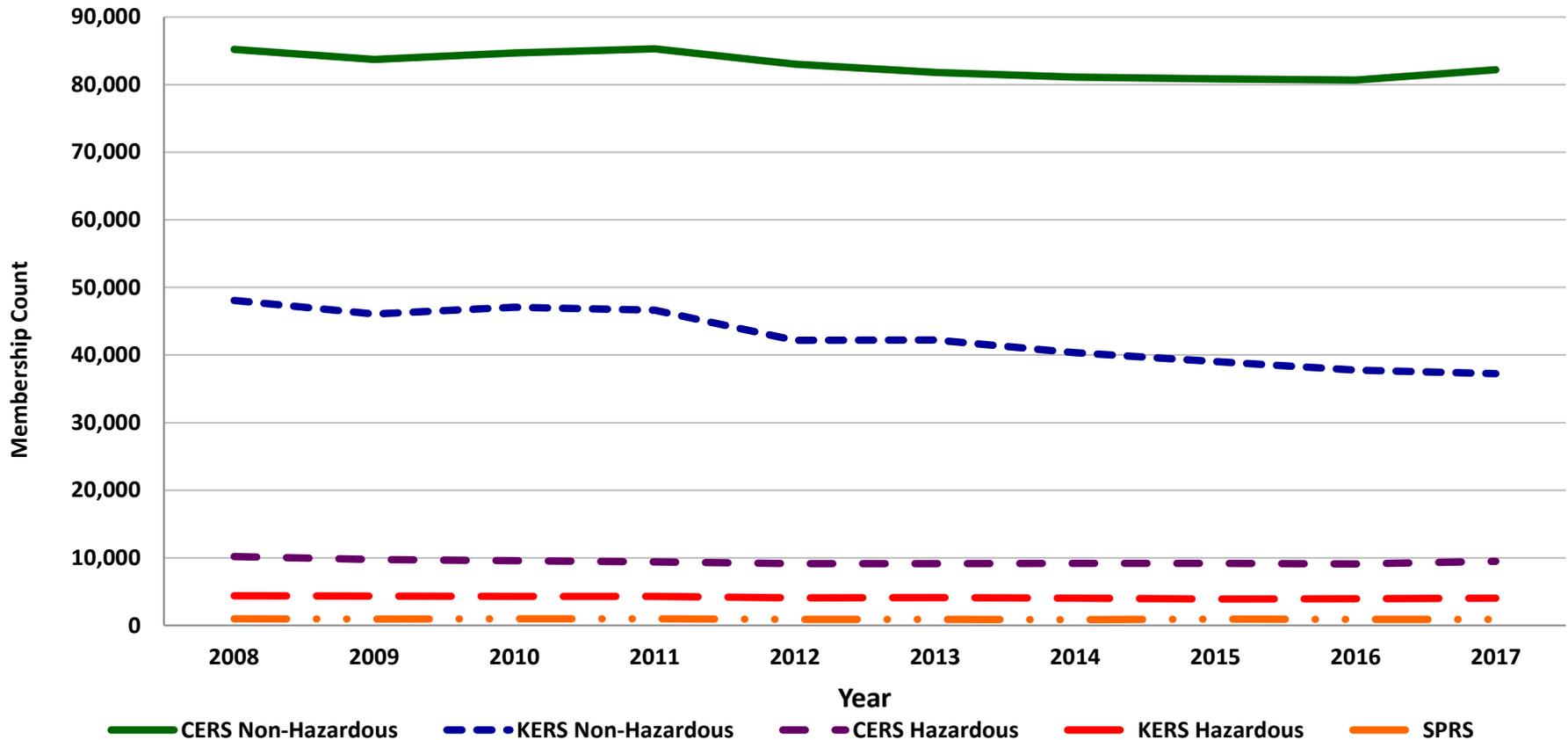
# Expected Employer Contribution Requirements (\$ in Millions) – FY 2018 and FY 2019

Item	FY 2018/2019 2017 Valuation			FY 2017/2018 Current Board Certified Rates			Increase (4) – (7)
	Pension	Insurance	Combined	Pension	Insurance	Combined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KERS Non-Hazardous	\$1,101	\$191	<b>\$1,292</b>	\$716	\$128	<b>\$844</b>	<b>\$448</b>
KERS Hazardous	57	4	<b>61</b>	45	4	<b>49</b>	<b>12</b>
CERS Non-Hazardous	546	154	<b>700</b>	355	114	<b>469</b>	<b>231</b>
CERS Hazardous	192	65	<b>257</b>	120	51	<b>171</b>	<b>86</b>
SPRS	58	13	<b>71</b>	45	9	<b>54</b>	<b>17</b>

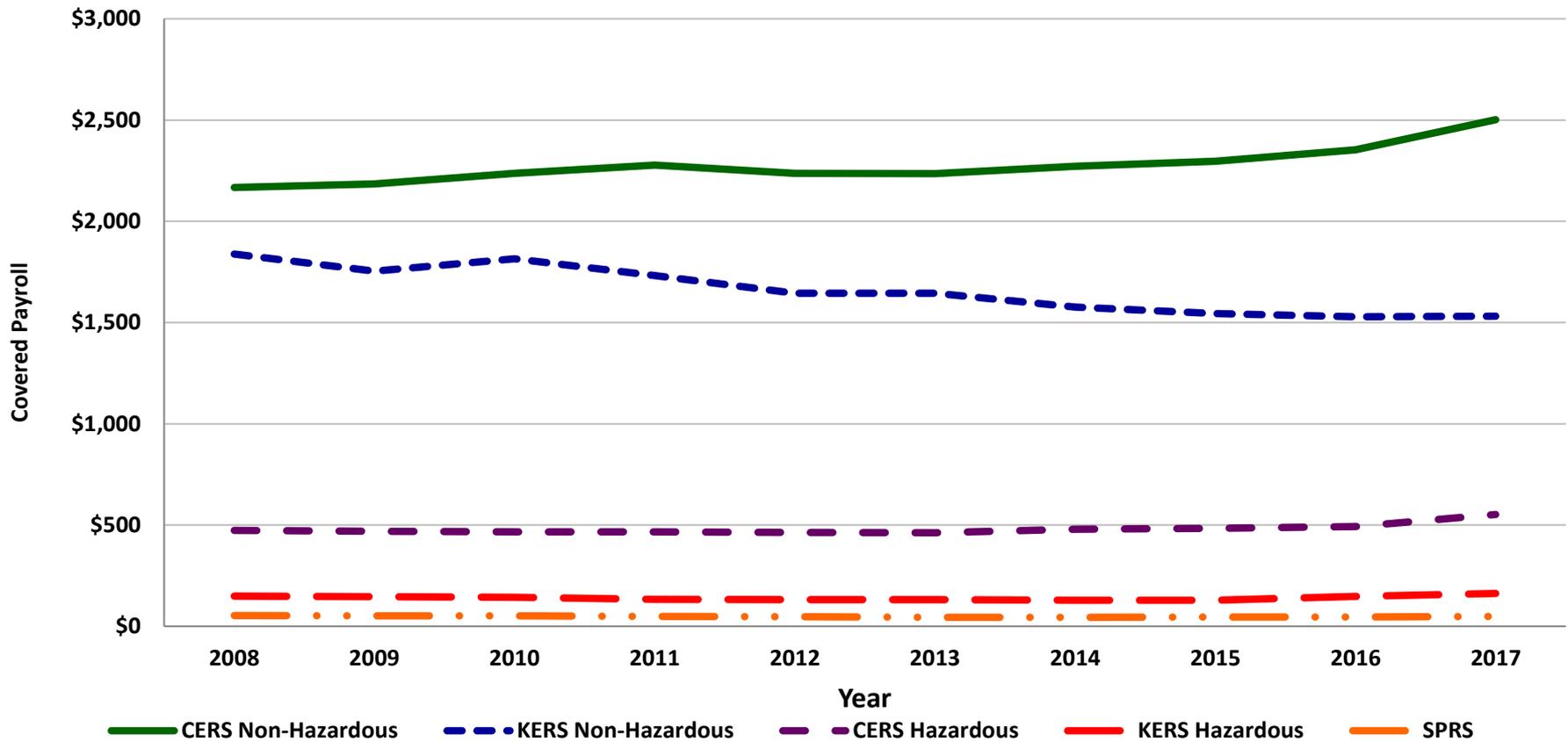
# Unfunded Actuarial Accrued Liability – Actuarial Value of Asset Basis (\$ in Billions)

Item	2017 Valuation			2016 Valuation			Change In UAAL
	Pension	Insurance	Combined	Pension	Insurance	Combined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KERS Non-Hazardous	\$13.47	\$1.86	\$15.33	\$11.11	\$1.71	\$12.83	<b>\$2.50</b>
KERS Hazardous	0.51	(0.07)	0.44	0.38	(0.10)	0.28	<b>\$0.16</b>
CERS Non-Hazardous	6.04	1.13	7.17	4.54	0.91	5.44	<b>\$1.73</b>
CERS Hazardous	2.41	0.59	3.00	1.57	0.42	1.99	<b>\$1.01</b>
SPRS	0.71	0.10	0.81	0.54	0.09	0.63	<b>\$0.18</b>
<b>Total</b>	<b>\$23.14</b>	<b>\$3.61</b>	<b>\$26.75</b>	<b>\$18.14</b>	<b>\$3.03</b>	<b>\$21.17</b>	<b>\$5.58</b>

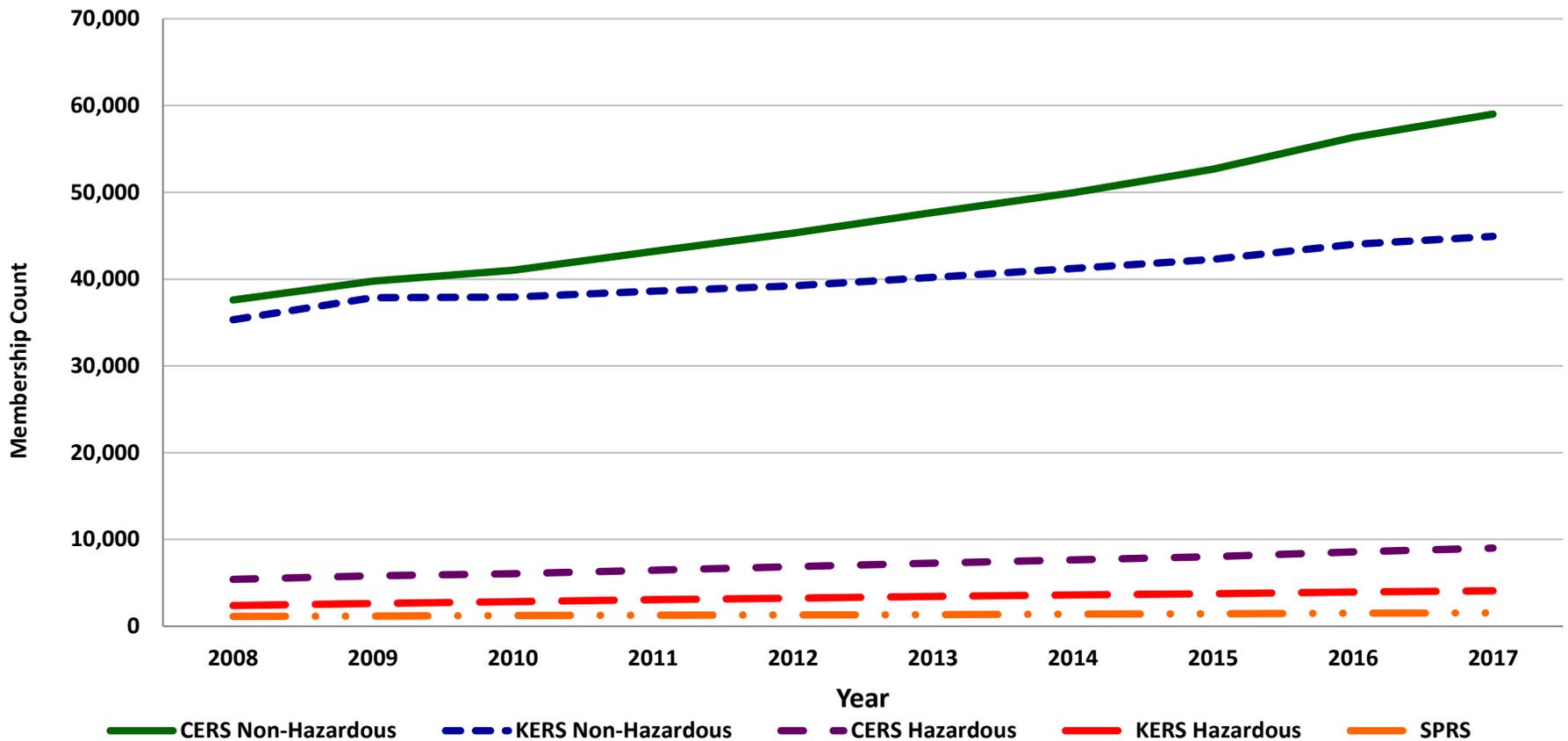
# Active Membership Count



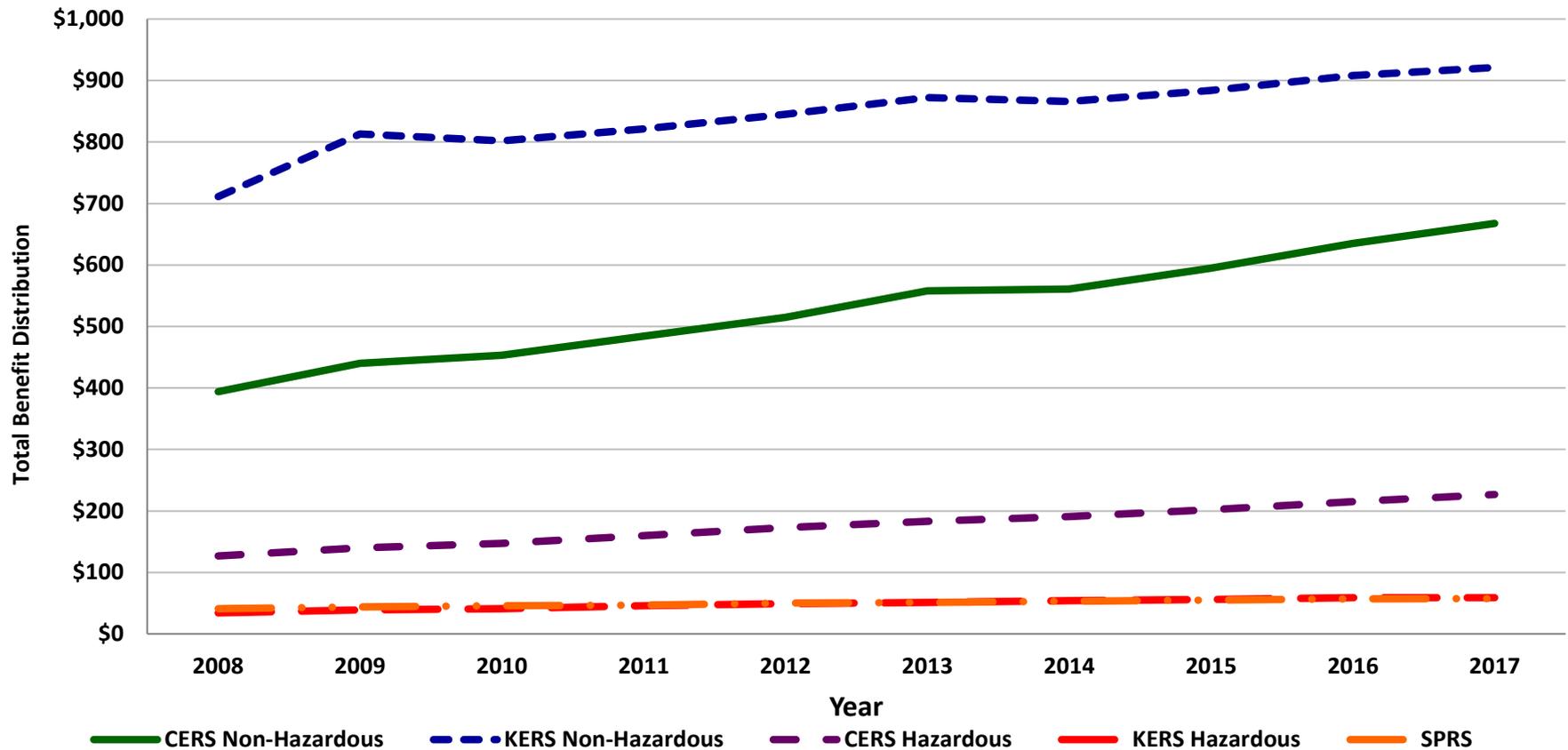
# Covered Payroll (\$ in Millions)



# Retired Membership Count



# Benefit Distributions (\$ in Millions)



# Funding Results – KERS Non-Hazardous

Item	Pension		Insurance	
	2017	2016	2017	2016
(1)	(2)	(3)	(4)	(5)
Total Normal Cost Rate	12.45%	9.25%	3.06%	2.51%
Member Rate	<u>(5.00%)</u>	<u>(5.00%)</u>	<u>(0.35%)</u>	<u>(0.32%)</u>
Employer Normal Cost Rate	7.45%	4.25%	2.71%	2.19%
Administrative Expenses	0.72%	0.68%	0.06%	0.05%
Amortization Cost	<u>62.86%</u>	<u>37.05%</u>	<u>9.63%</u>	<u>6.17%</u>
<b>Total Employer Contribution Rate</b>	<b>71.03%</b>	<b>41.98%</b>	<b>12.40%</b>	<b>8.41%</b>
Actuarial Accrued Liability	\$15,592	\$13,225	\$2,683	\$2,457
Actuarial Value of Assets	<u>2,124</u>	<u>2,112</u>	<u>824</u>	<u>743</u>
<b>Unfunded Actuarial Accrued Liability</b>	<b>\$13,468</b>	<b>\$11,113</b>	<b>\$1,860</b>	<b>\$1,714</b>
<b>Funded Ratio</b>	<b>13.6%</b>	<b>16.0%</b>	<b>30.7%</b>	<b>30.3%</b>
<b>Covered Payroll</b>	<b>\$1,532</b>	<b>\$1,529</b>	<b>\$1,532</b>	<b>\$1,529</b>

\$ in millions

# Funding Results – KERS Hazardous

Item	Pension		Insurance	
	2017	2016	2017	2016
(1)	(2)	(3)	(4)	(5)
Total Normal Cost Rate	17.1%	13.85%	6.40%	5.29%
Member Rate	<u>(8.00%)</u>	<u>(8.00%)</u>	<u>(0.52%)</u>	<u>(0.46%)</u>
Employer Normal Cost Rate	9.10%	5.85%	5.88%	4.83%
Administrative Expenses	0.57%	0.59%	0.06%	0.07%
Amortization Cost	<u>24.72%</u>	<u>14.04%</u>	<u>(3.48%)</u>	<u>(3.56%)</u>
<b>Total Employer Contribution Rate</b>	<b>34.39%</b>	<b>20.48%</b>	<b>2.46%</b>	<b>1.34%</b>
Actuarial Accrued Liability	\$1,121	\$937	\$419	\$378
Actuarial Value of Assets	<u>607</u>	<u>559</u>	<u>493</u>	<u>473</u>
<b>Unfunded Actuarial Accrued Liability</b>	<b>\$514</b>	<b>\$378</b>	<b>(\$74)</b>	<b>(\$95)</b>
<b>Funded Ratio</b>	<b>54.1%</b>	<b>59.7%</b>	<b>117.6%</b>	<b>125.3%</b>
<b>Covered Payroll</b>	<b>\$162</b>	<b>\$148</b>	<b>\$162</b>	<b>\$148</b>

\$ in millions

# Funding Results – CERS Non-Hazardous

Item	Pension		Insurance	
	2017	2016	2017	2016
(1)	(2)	(3)	(4)	(5)
Total Normal Cost Rate	10.01%	7.92%	3.57%	2.90%
Member Rate	<u>(5.00%)</u>	<u>(5.00%)</u>	<u>(0.41%)</u>	<u>(0.36%)</u>
Employer Normal Cost Rate	5.05%	2.92%	3.16%	2.54%
Administrative Expenses	0.80%	0.78%	0.03%	0.03%
Amortization Cost	<u>15.99%</u>	<u>10.78%</u>	<u>3.02%</u>	<u>2.13%</u>
<b>Total Employer Contribution Rate</b>	<b>21.84%</b>	<b>14.48%</b>	<b>6.21%</b>	<b>4.70%</b>
Actuarial Accrued Liability	\$12,804	\$11,076	\$3,355	\$2,988
Actuarial Value of Assets	<u>6,765</u>	<u>6,535</u>	<u>2,227</u>	<u>2,080</u>
<b>Unfunded Actuarial Accrued Liability</b>	<b>\$6,039</b>	<b>\$4,541</b>	<b>\$1,128</b>	<b>\$908</b>
<b>Funded Ratio</b>	<b>52.8%</b>	<b>59.0%</b>	<b>66.4%</b>	<b>69.6%</b>
<b>Covered Payroll</b>	<b>\$2,452</b>	<b>\$2,353</b>	<b>\$2,452</b>	<b>\$2,353</b>

\$ in millions

# Funding Results – CERS Hazardous

Item	Pension		Insurance	
	2017	2016	2017	2016
(1)	(2)	(3)	(4)	(5)
Total Normal Cost Rate	14.52%	12.13%	5.38%	4.85%
Member Rate	<u>(8.00%)</u>	<u>(8.00%)</u>	<u>(0.35%)</u>	<u>(0.30%)</u>
Employer Normal Cost Rate	6.52%	4.13%	5.03%	4.55%
Administrative Expenses	0.26%	0.27%	0.07%	0.07%
Amortization Cost	<u>28.91%</u>	<u>17.80%</u>	<u>7.07%</u>	<u>4.73%</u>
<b>Total Employer Contribution Rate</b>	<b>35.69%</b>	<b>22.20%</b>	<b>12.17%</b>	<b>9.35%</b>
Actuarial Accrued Liability	\$4,649	\$3,704	\$1,788	\$1,559
Actuarial Value of Assets	<u>2,238</u>	<u>2,139</u>	<u>1,197</u>	<u>1,136</u>
<b>Unfunded Actuarial Accrued Liability</b>	<b>\$2,411</b>	<b>\$1,565</b>	<b>\$592</b>	<b>\$423</b>
<b>Funded Ratio</b>	<b>48.1%</b>	<b>57.7%</b>	<b>66.9%</b>	<b>72.9%</b>
<b>Covered Payroll</b>	<b>\$542</b>	<b>\$493</b>	<b>\$542</b>	<b>\$493</b>

\$ in millions

# Funding Results – SPRS

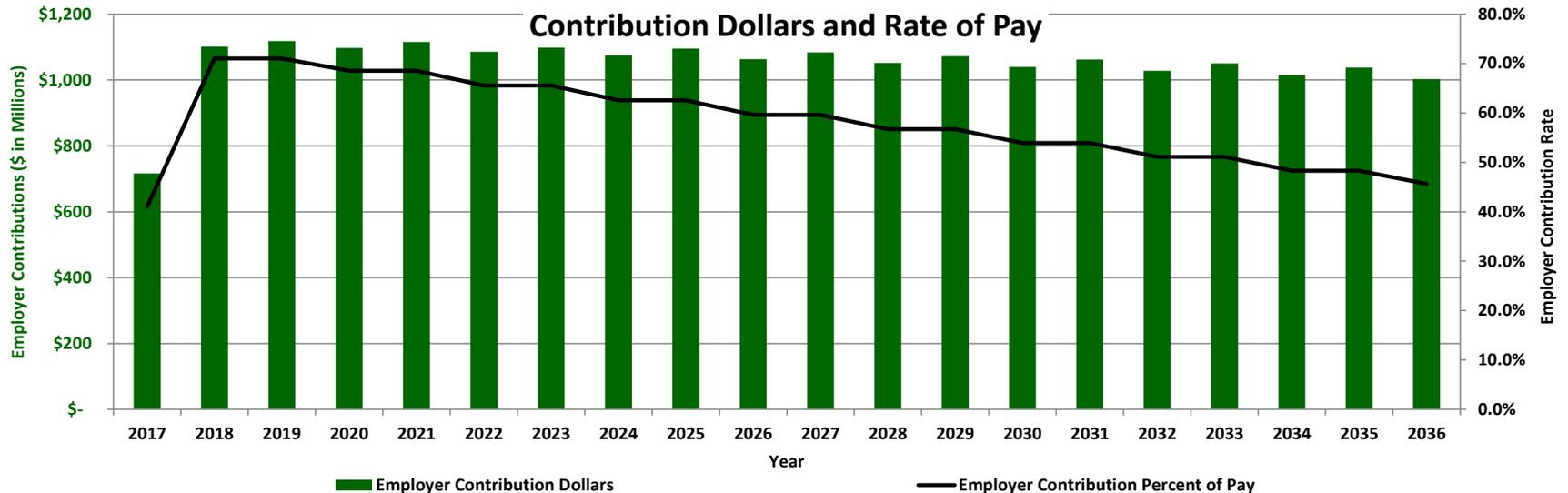
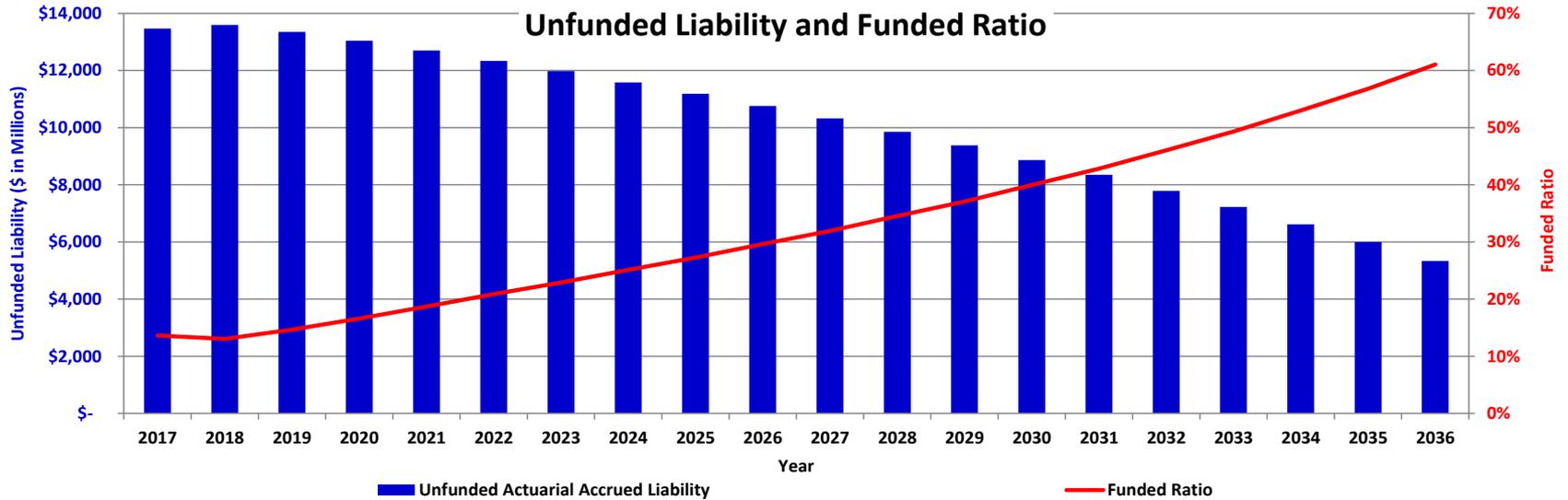
Item	Pension		Insurance	
	2017	2016	2017	2016
(1)	(2)	(3)	(4)	(5)
Total Normal Cost Rate	23.84%	18.79%	11.48%	8.01%
Member Rate	<u>(8.00%)</u>	<u>(8.00%)</u>	<u>(0.30%)</u>	<u>(0.27%)</u>
Employer Normal Cost Rate	15.84%	10.79%	11.18%	7.74%
Administrative Expenses	0.37%	0.37%	0.14%	0.14%
Amortization Cost	<u>102.84%</u>	<u>60.41%</u>	<u>15.91%</u>	<u>10.22%</u>
<b>Total Employer Contribution Rate</b>	<b>119.05%</b>	<b>71.57%</b>	<b>27.23%</b>	<b>18.10%</b>
Actuarial Accrued Liability	\$967	\$775	277	257
Actuarial Value of Assets	<u>261</u>	<u>235</u>	<u>180</u>	<u>173</u>
<b>Unfunded Actuarial Accrued Liability</b>	<b>\$706</b>	<b>\$540</b>	<b>\$96</b>	<b>\$84</b>
<b>Funded Ratio</b>	<b>27.0%</b>	<b>30.3%</b>	<b>65.2%</b>	<b>67.1%</b>
<b>Covered Payroll</b>	<b>\$49</b>	<b>\$46</b>	<b>\$49</b>	<b>\$46</b>

\$ in millions

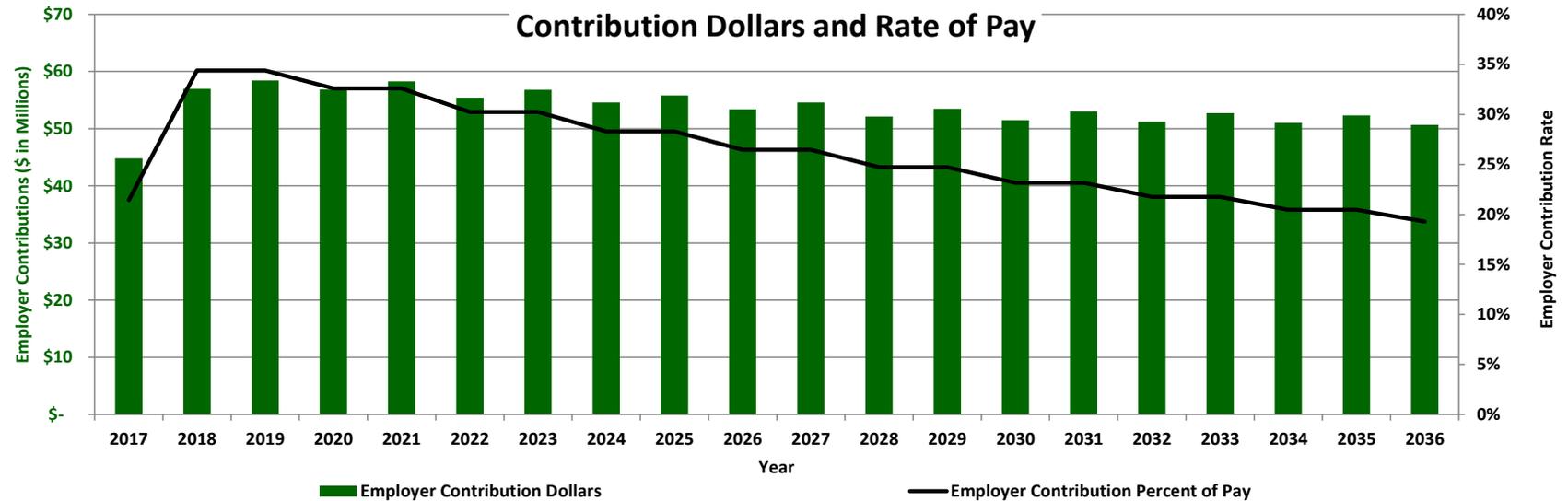
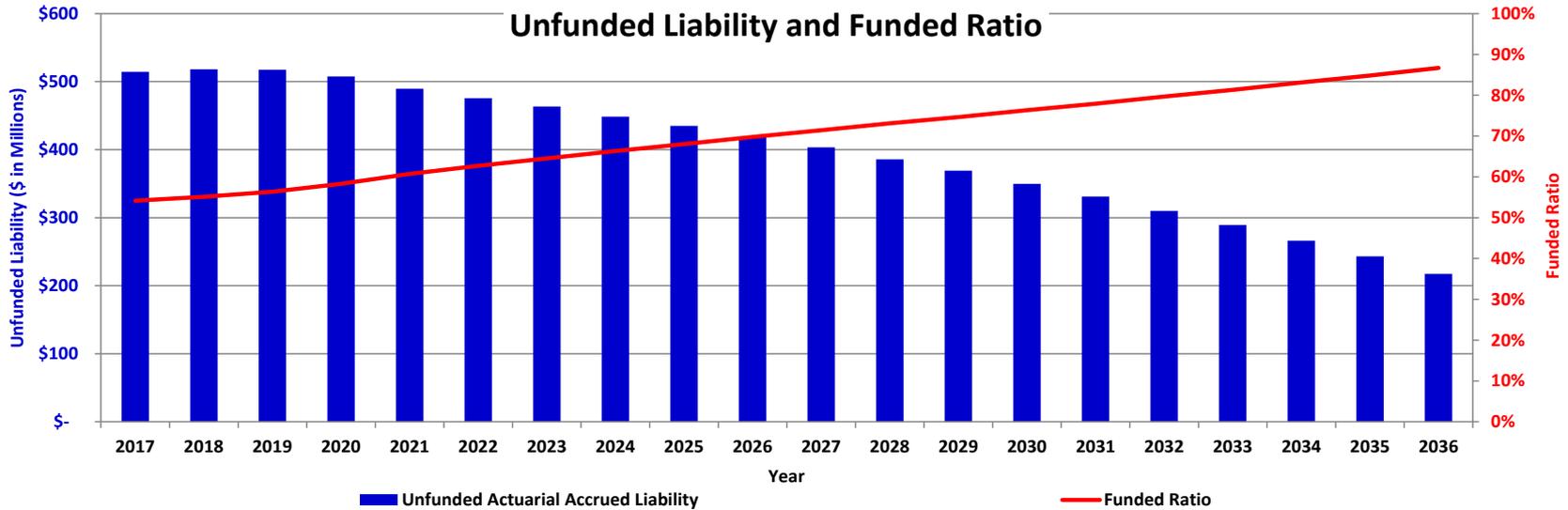
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# Projection Information Pension Funds

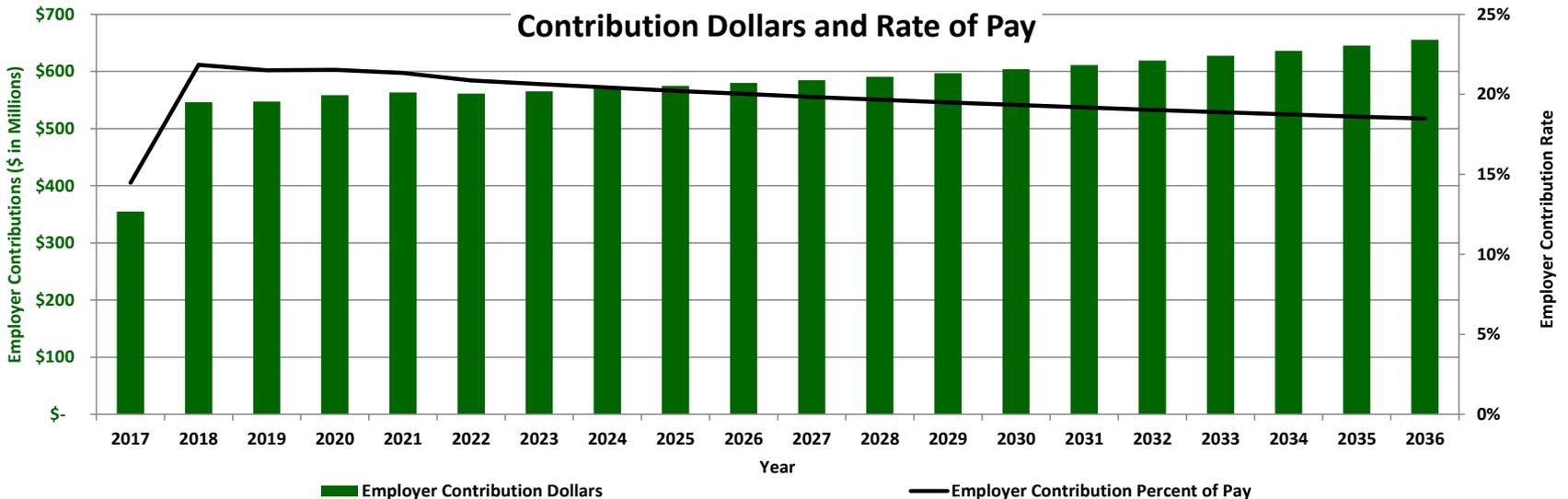
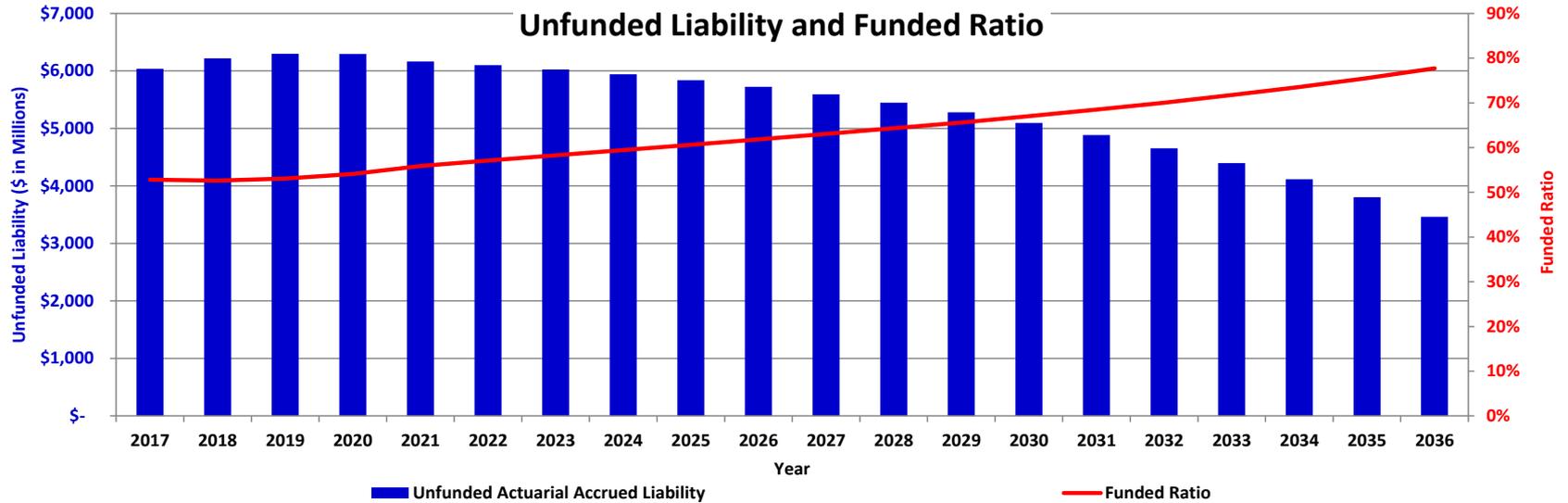
# KERS Non-Hazardous - Pension



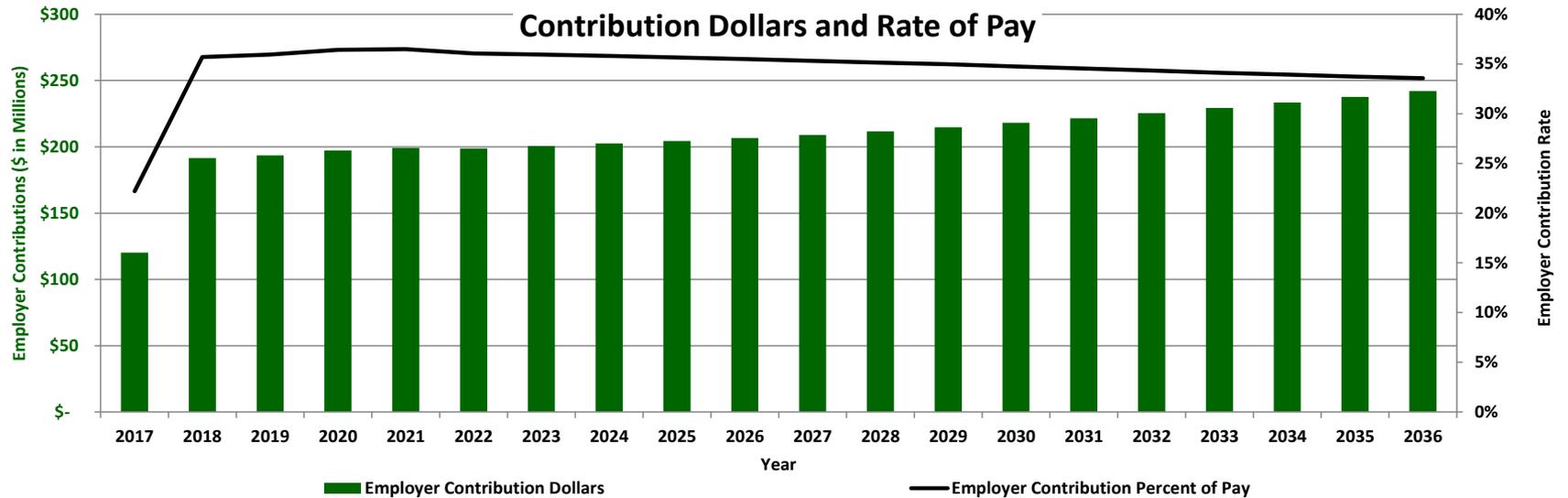
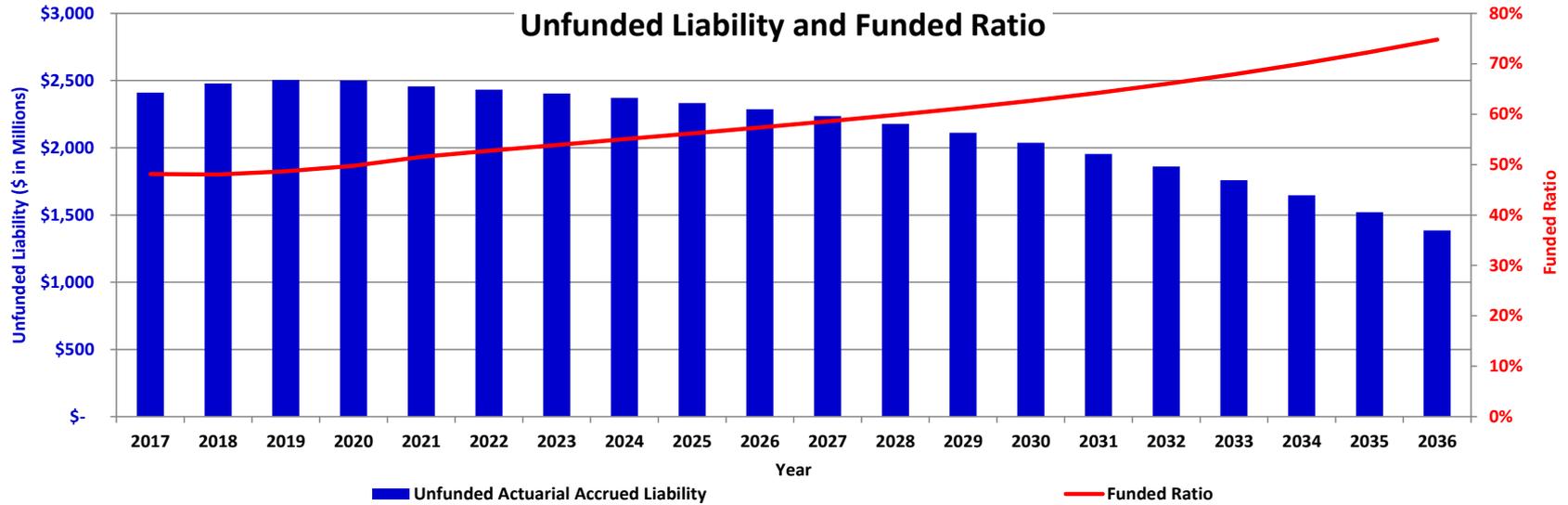
# KERS Hazardous - Pension



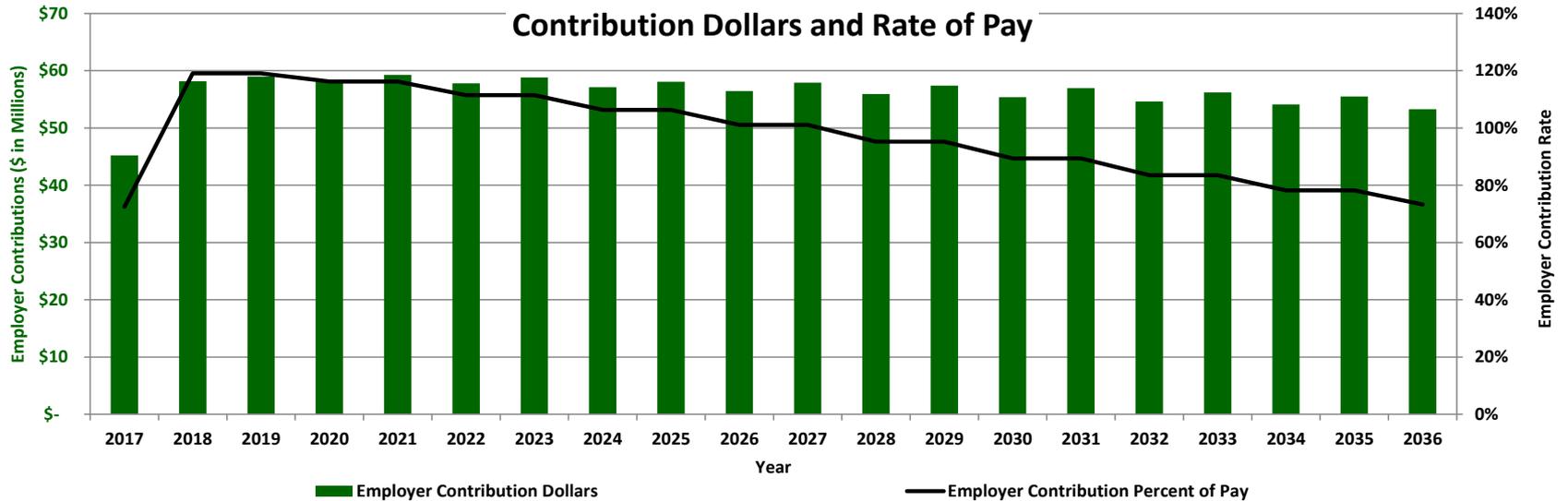
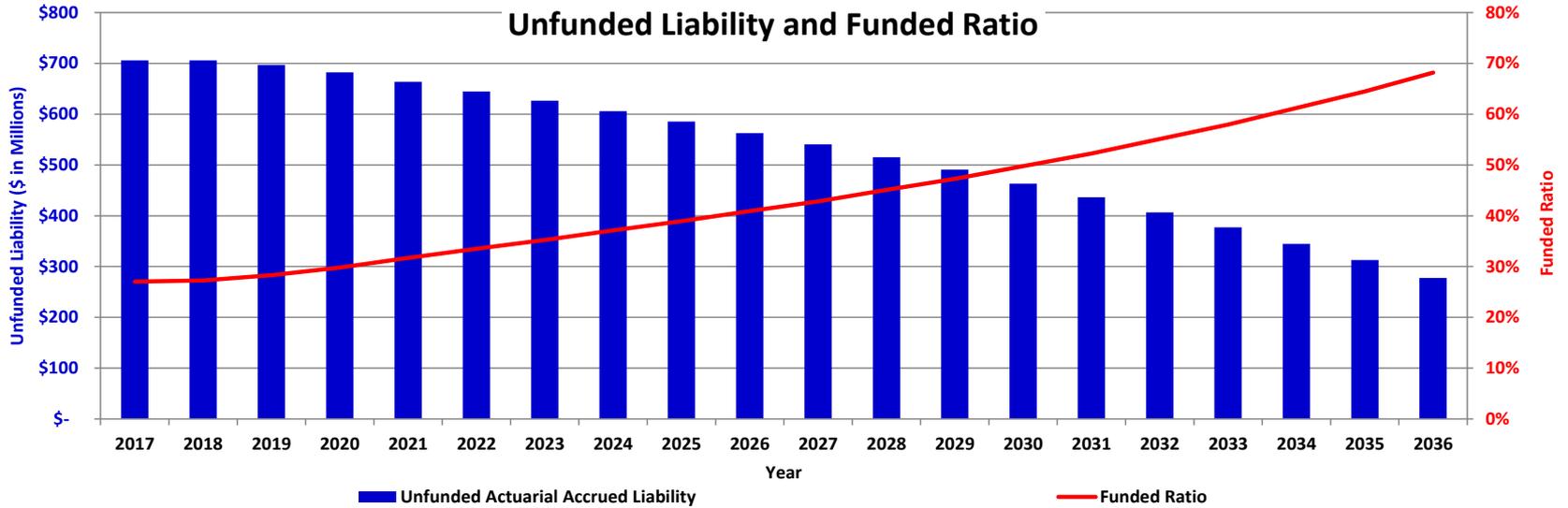
# CERS Non-Hazardous - Pension



# CERS Hazardous - Pension



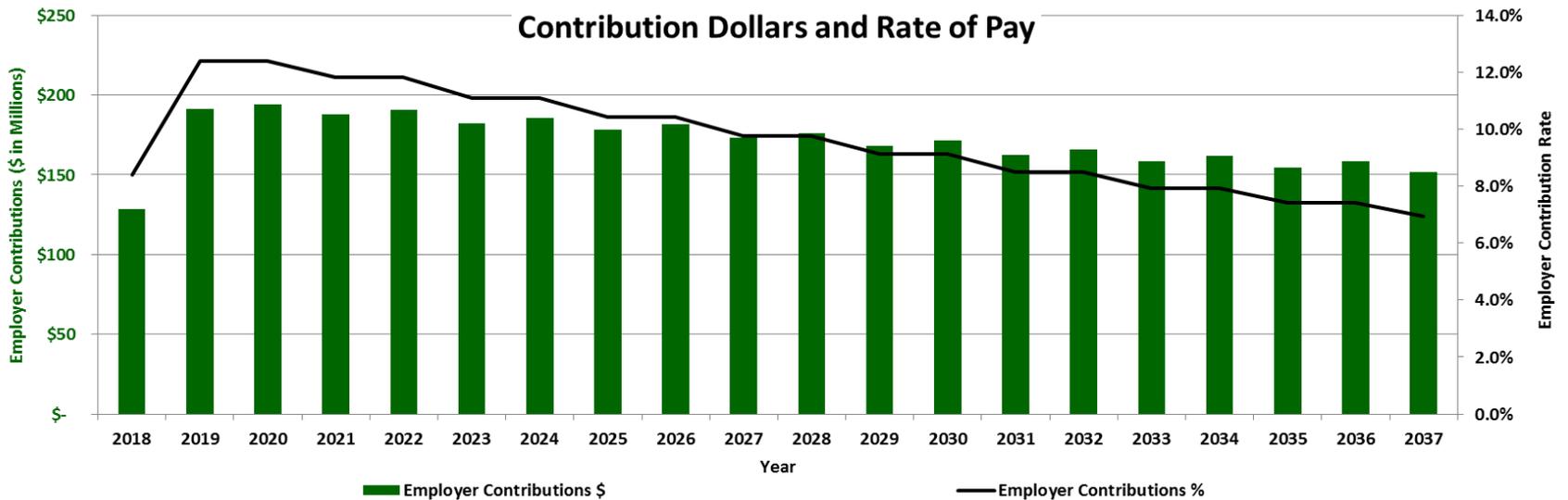
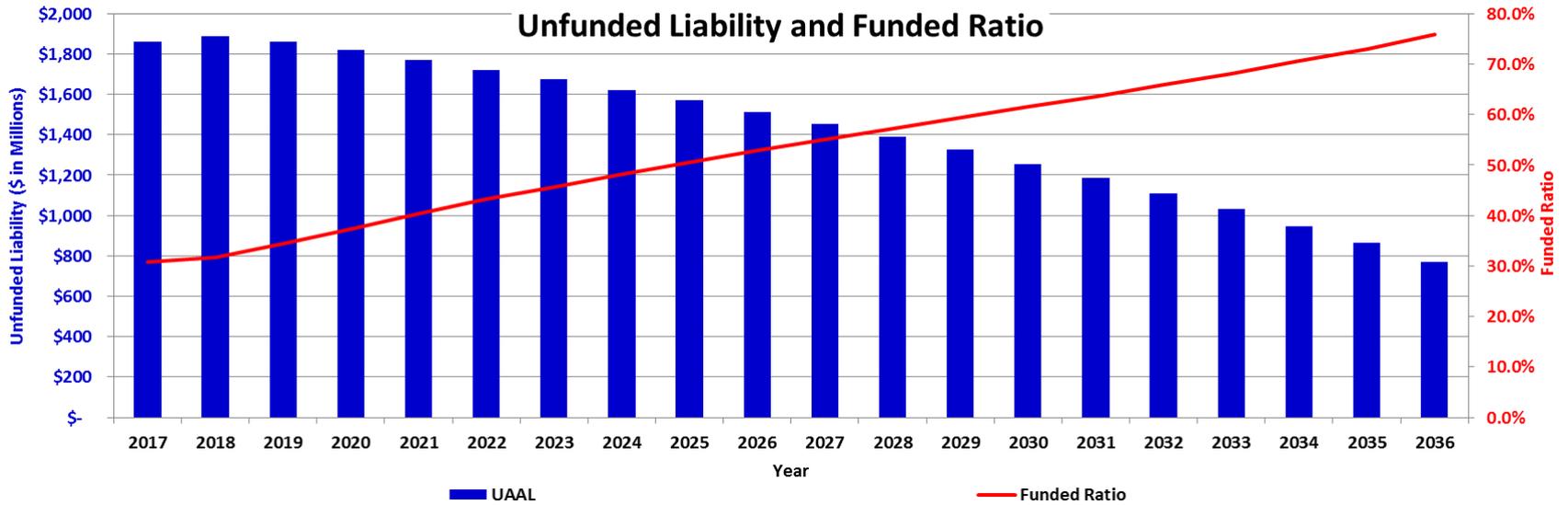
# SPRS - Pension



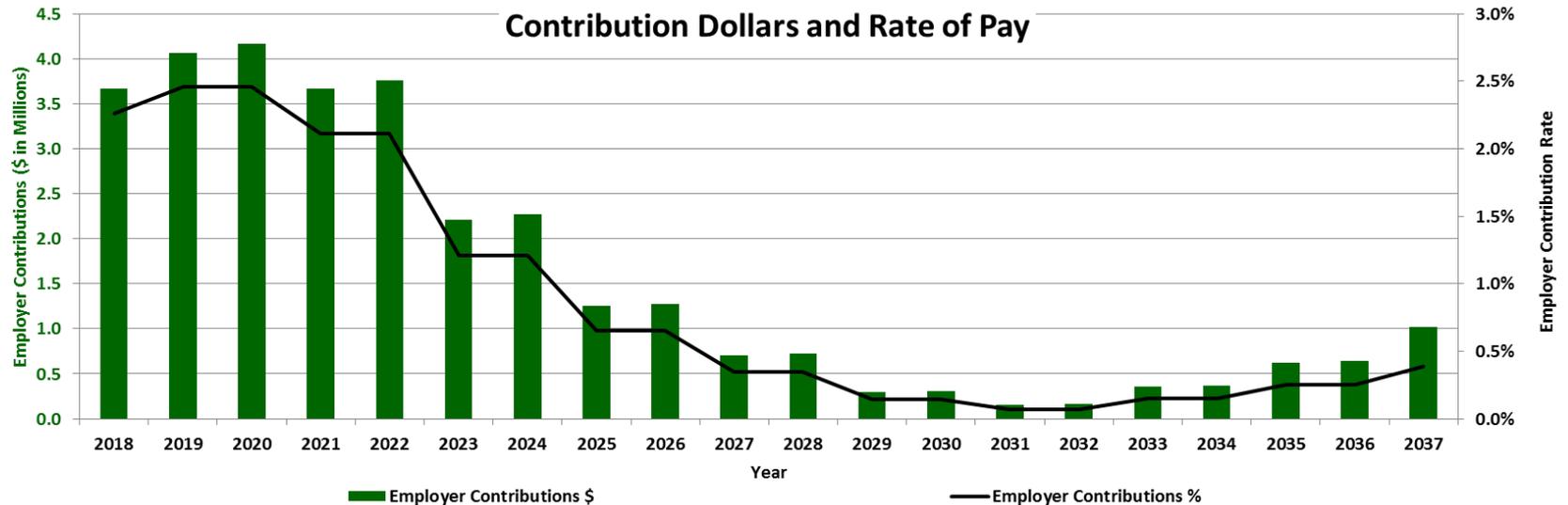
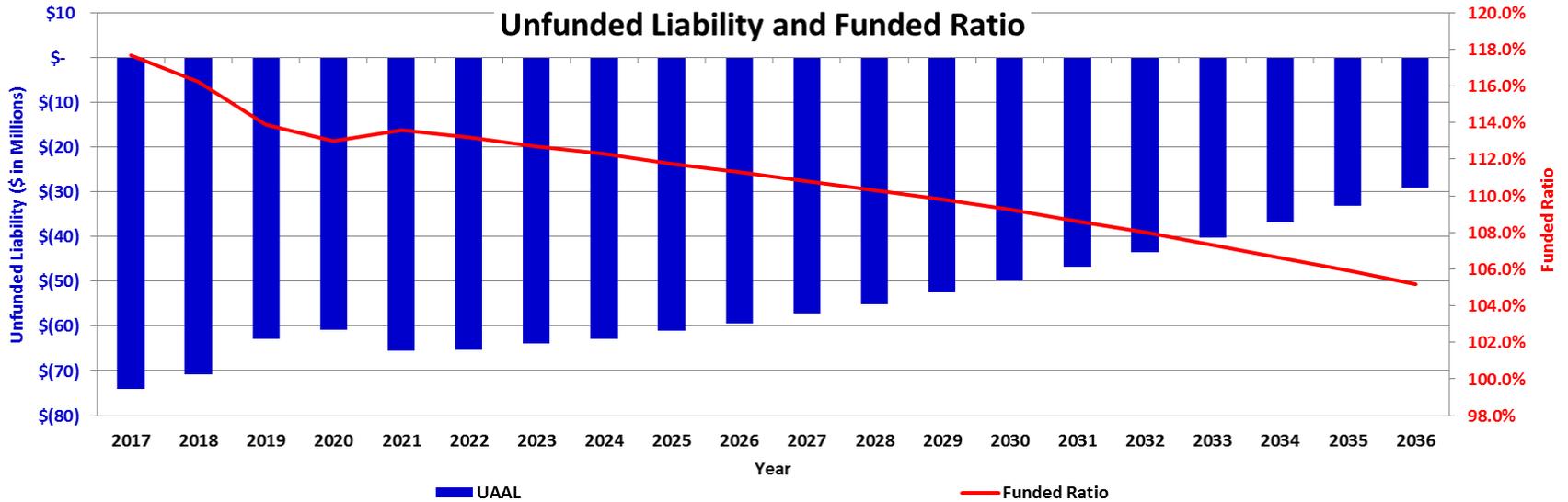
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# Projection Information Health Insurance Funds

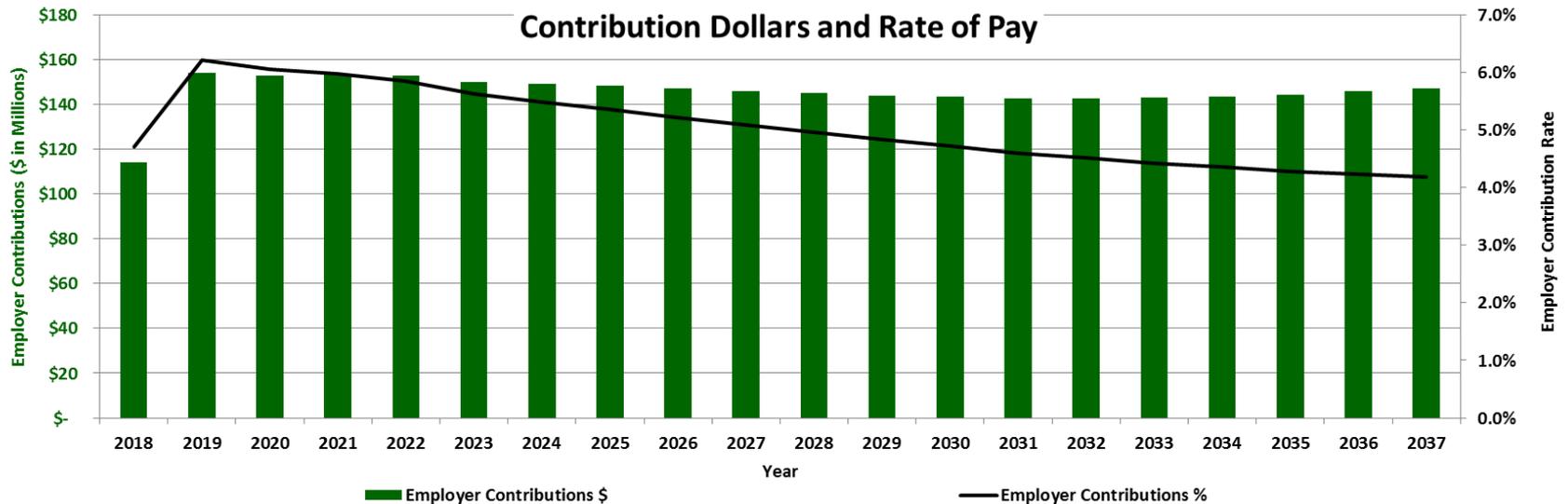
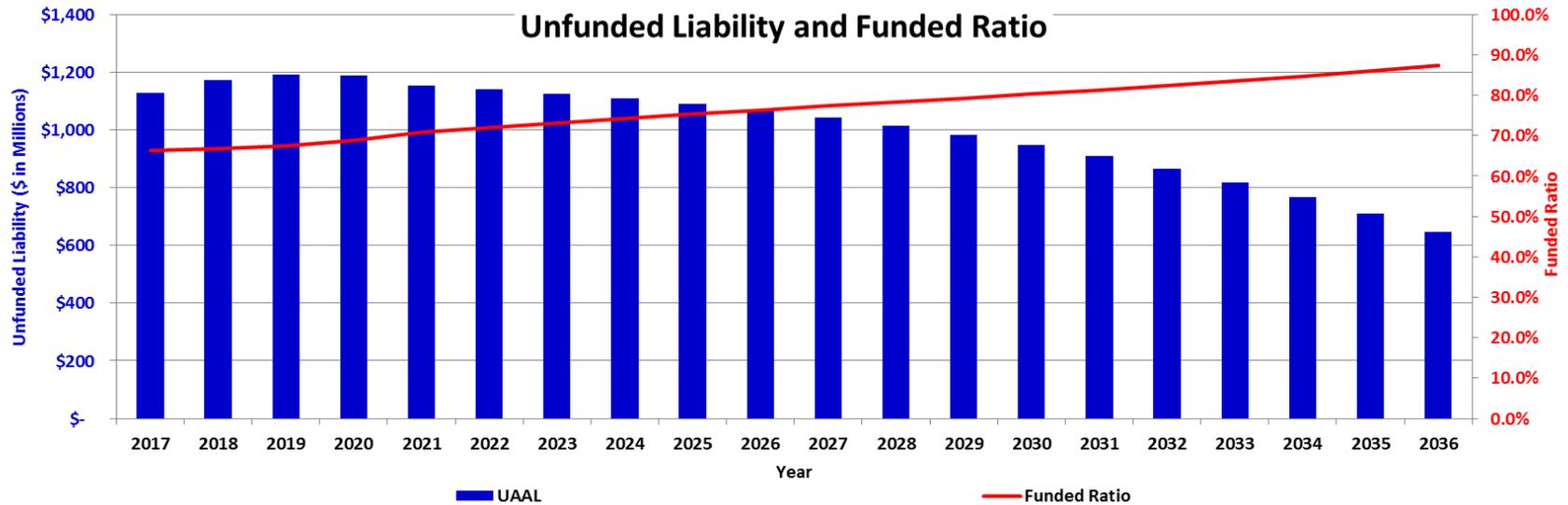
# KERS Non-Hazardous - Health Insurance



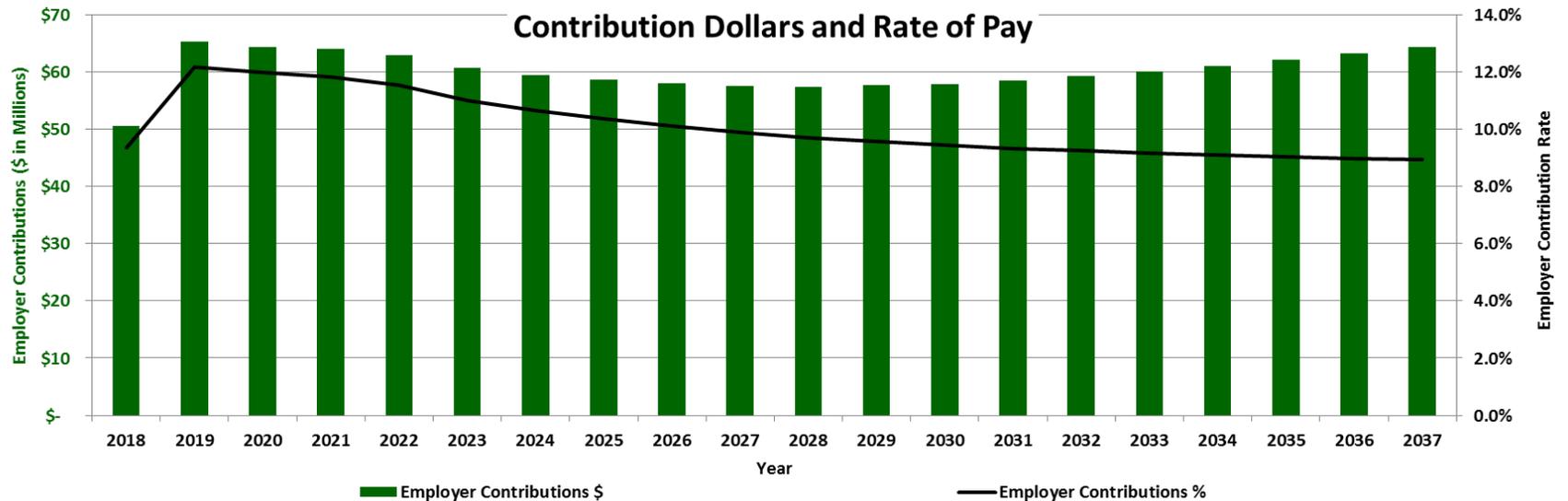
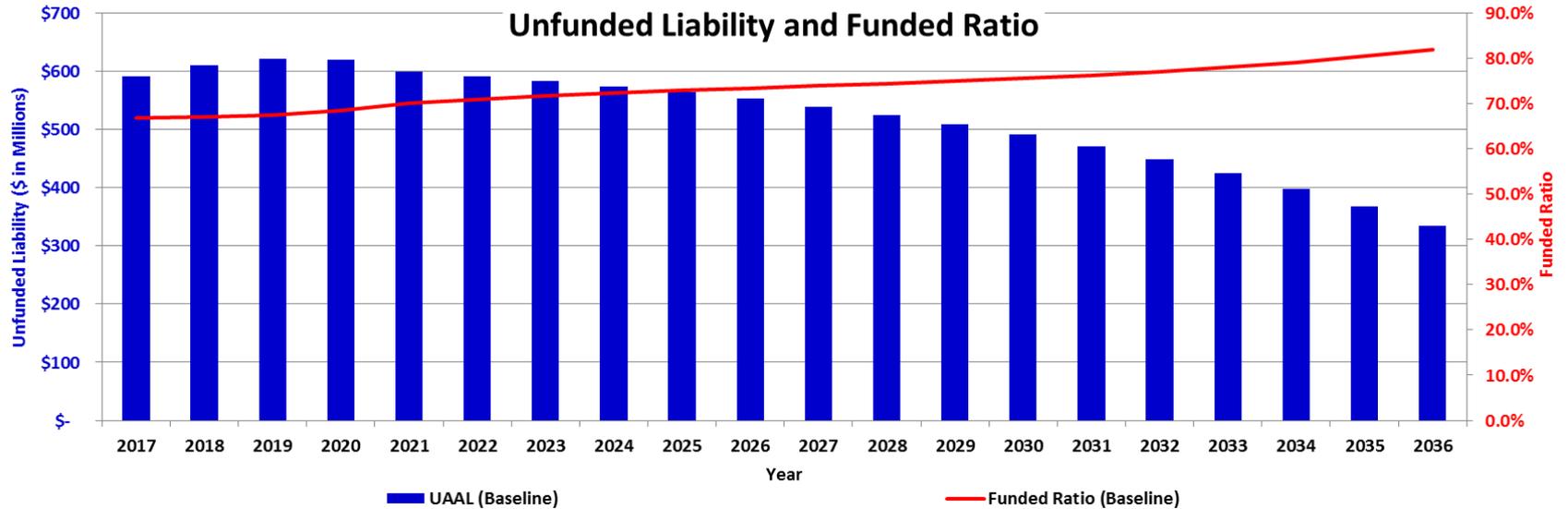
# KERS Hazardous - Health Insurance



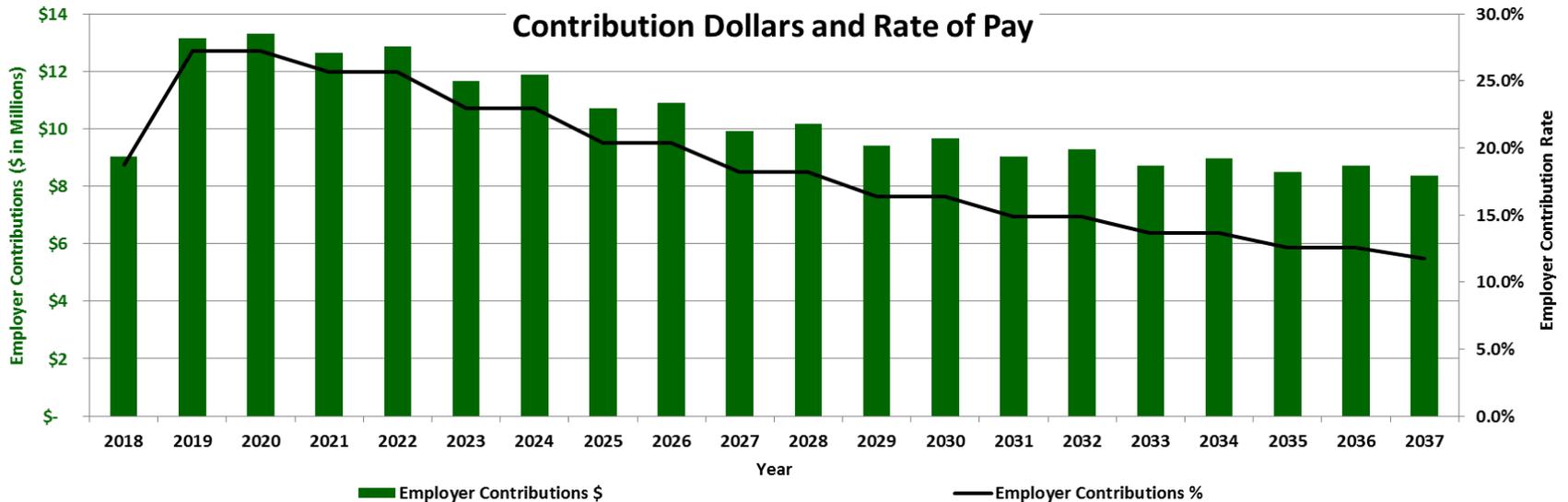
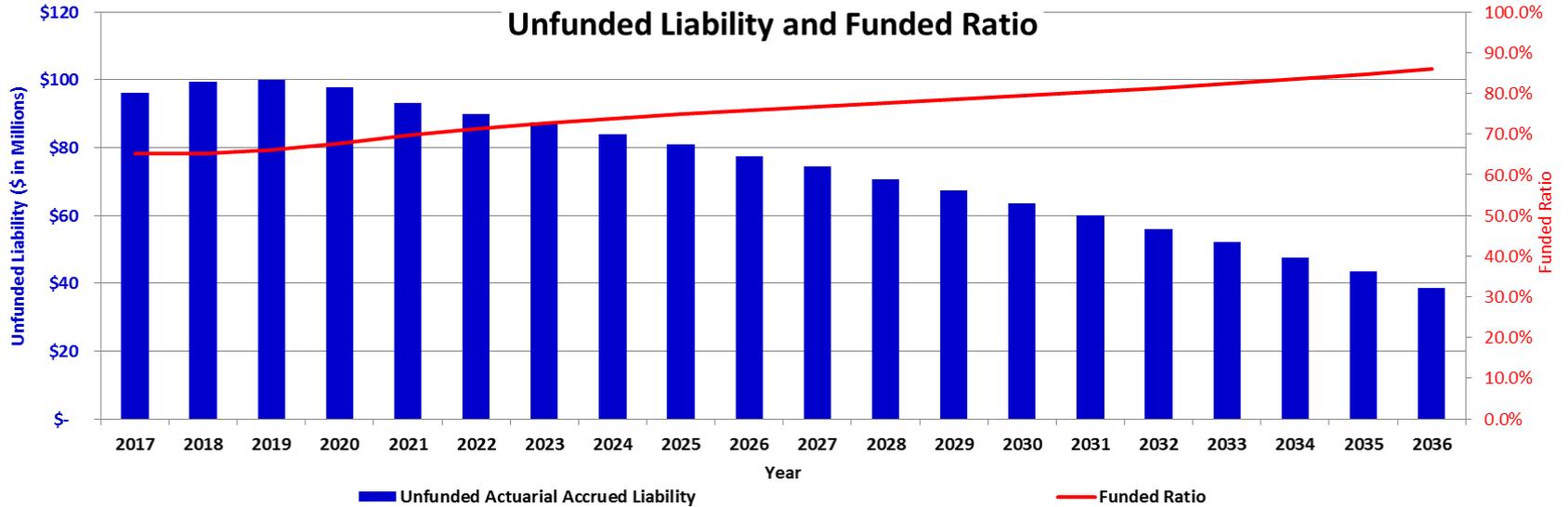
# CERS Non-Hazardous - Health Insurance



# CERS Hazardous - Health Insurance



# SPRS - Health Insurance



# Closing Comments

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- It is imperative the State and participating employers in the Systems contribute the actuarial determined contribution in future years to improve the financial security of the systems
- The economic assumptions that were adopted for use in the 2017 actuarial valuation will increase the likelihood that contribution requirements will remain more stable in future years (due to investment and covered payroll growth experience)
- An experience study will be conducted for the 5-year period ending June 30, 2018 which will determine actuarial assumptions for use in the June 30, 2019 valuation

# Disclaimers

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- This presentation is intended to be used in conjunction with the actuarial valuations as of June 30, 2017. This presentation should not be relied on for any purpose other than the purpose described in the valuation report.
- Readers are cautioned to examine original source materials and to consult with subject matter experts before making decisions related to the subject matter of this presentation.
- This presentation shall not be construed to provide tax advice, legal advice or investment advice.